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AUTHOR Miller, Vernon; And Others
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ABSTRACT

The integration of micro-macro variables is critical to the development of organizational communication as an academic field. Mixed-level analysis is inherent in organizational phenomena, and its neglect perpetuates the gap in and fragmentation of organizational communication theories. Three of the many ways to design mixed-level analyses are compositional, cross-level, and multi-level. These mixed-level models for integrating organizational communication research reveal a breadth of research foci reflective of the nature of the phenomena studied, researchers' interests, and the ease or difficulty of mixed-level analyses. Meta-analytic techniques, structuration, and population ecology theories are means of addressing the contradictory, paradoxical, and perplexing factors shaping communication activities and processes that supersede the investigative ability of most mixed-level designs. Steps that may help researchers involved in single-level lines of research to convert to mixed-level designs include: (1) an increased reporting of organizational characteristics such as organizational structure, technology, environment, and life cycle stage; (2) increased use of macro features as manipulative checks; and (3) seeking theoretical and empirical resolution of problems associated with equivocal instruments and with contradictory, insignificant, and/or inconclusive results. (A table representing an illustrative review of research with macro features as independent variables and communication activities as dependent variables is included; 129 references are attached.) (RS)

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Integrating Micro-Macro Organizational Communication Research:

Rationale, Issues, and Mechanisms

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Vernon Miller
Dept. of Communication
Michigan State University
East Lansing, MI 48824-1212
(517) 355-3280

Mike Allen
Dept. of Communication
University of Wisconsin-Milwaukee
Milwaukee, WI 53201
(414) 229-4510

Kathleen Krone
Dept. of Communication
Ohio State University
Columbus, OH 43210
(614) 292-3400

Raymond Preiss
Dept. of Speech Communication and Theatre Arts
University of Puget Sound
Tacoma, WA 98416
(206) 952-8668

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Integrating Micro-Macro Organizational Communication Research:

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A B S T R A C T

Citing a need for greater integration, this essay provides a rationale for and illustrations of different means for integrative organizational communication research. The various forms of mixed-level designs are elaborated along with their strengths and weaknesses as used in organizational settings. In addition, several integrative mechanisms which extend beyond the provinces of mixed-level designs are discussed and briefly critiqued.

Integrating Micro-Macro Organizational Communication Research:

Rationale, Issues, and Mechanisms

It seems that every few years a scholarly article laments the state of organizational communication research-in-practice (Daly & Korinek, 1982; Dennis, Goldhaber, & Yates, 1978; Falcione & Kaplan, 1984; Monge, Farace, Eisenberg, Miller, & White, 1984). Though there may be a spurious relationship between the appearance of these articles and changes in research practices, increasing attention is devoted to design specification and the explicitness with which constructs are tested, alleviating many misspecification, data aggregation, and construct validity problems.

A continued neglect, however, of researching mixed-level features imperils the ability of the organizational communication field to keep theoretical and methodological pace with parallel fields (i.e., organizational behavior, organizational sociology). Specifically, infrequent investigations into interactions between levels of analysis exist, despite repeated admonitions about the necessity of such research (Berger & Cummings, 1979; Dennis, et al., 1978; Jablin, 1980, 1987; Porter & Lawler, 1965; Rousseau, 1985). Further, organizational communication research continues to disproportionately favor micro-level issues (Dennis, et al., 1978; Euske & Roberts, 1987; Jablin, 1982; Krone, Jablin, & Putnam, 1987) over macro issues. This disproportionate emphasis on single-level, micro-focused analyses (1) presents a fragmented description of organizational phenomena, (2) retards the development of mixed-level models critical to improved specification and increased generalization, and (3) leaves researchers unable to draw conclusions about moderating and causal effects in compositional, cross-level and multi-level analyses.

Consequently, the major goals of this essay are to provide a rationale for and illustrate the means of integrative organizational communication

research. Mixed-level designs enable researchers to compare among levels of analysis, provide choices for analyzing phenomena evidenced beyond a single-level of analysis, and lead to greater theoretical and empirical integration of knowledge. In arguing for the greater use of mixed-level designs in organizational communication research, the first section identifies the inadequacy of using only single-level research designs. The second section overviews the extent of mixed-level research in organizational communication studies. The third section critiques several theoretical and/or methodological mechanisms for integrative analyses, and a final section sets forth recommendations for changes in the design of future research.

At this juncture, several conceptual issues associated with this essay require elaboration. First, distinctions between "micro" and "macro" approaches date back several decades (Alexander & Giesen, 1987; Eisenstadt & Curelaru, 1976; McKelvey, 1981), with the first syntheses of macro organizational theories appearing in the late 1970s (e.g., Aldrich, 1979; Bedeian, 1980; Miles, 1980). However, confusion arises when these terms distinguish between specific and general modeling of managerial behavior (Shelby, 1988) or employees' conversational levels (Putnam, 1985). In this manuscript, "micro" and "macro" variables and processes refer to specific organizational entities or actions as opposed to distinctions between various micro processes (e.g., Pearce, Cronen, & Harris, 1980).

A micro view of organizations emphasizes "structures and processes (cognitive, emotional, and physical) within individuals, small groups, and their leaders, and the linkages among them" (Miles, 1980, p.3). Micro analyses focus on the interaction structures and processes within or among sets of interpersonal relationships (e.g., group decision making processes, employment interviewing). In contrast, a macro view of organizations is concerned with "structures and processes within major subsystems, organizations, and their

environments, and the linkages among them" (Miles, 1980, p. 3) and examines those "patterns of behavior across collections of organizational members that are influenced by the larger social structures of organization and environment" (pp. 3-4). Macro variables constitute and shape structures and processes within organizations, departments, and workgroups and "affect who talks to whom and about what" (Weick, 1983, p. 20).

Since systems can be placed within ever larger supra-systems, the relative level of micro- or macro-ness in research depends on the choices of the scholar. The dichotomous use of these terms (1) should be viewed as analytic choices along a continuum instead of irredeemable dichotomies and (2) reflects heuristic and conventional wisdom as opposed to some type of objective reality. Yet, the identification of levels is not arbitrary as conventional standards for distinguishing micro- and macro-level structures and processes are readily available (e.g., Miles, 1980).

Second, there exist several articles general in nature (Berger & Cummings, 1979; Dansereau & Markham, 1987a; Rosseau, 1985) as well as specific to organizational communication (Dansereau & Markham, 1987b; Jablin & Krone, 1987; Johnson, in press; McPhee, 1988; Monge, 1987) addressing cross-level research. However, those exhortations focus on specific issues or topics, do not survey a variety of possible micro-macro integrations, and tend to make topic-specific recommendations. Moreover, despite previous urgings, comparatively few communication scholars incorporate cross- or multi-levels into their research designs.

Third, while most examples in this essay are quantitative in data analysis, integrative research is equally necessary for and applicable to qualitative analyses. The development of research designs precede and transcend researchers' choice of data analysis. Qualitative analyses require as much

attention to the focal unit of analysis (McClintock, Brannon, & Maynard-Moody, 1983; Sanday, 1983) and have the same potential for mixed-level research as quantitative approaches. In these respects, a mixed-level qualitative analysis extends beyond triangulations which provide a form of multi-trait, multi-method construct validity. As with quantitative analyses, mixed-level research also analyzes similarities and differences in communication behavior and its interpretation due to hierarchical levels or departments and due to the impact of macro variables on dyadic communication behavior/interpretation.

The Necessity of Micro-Macro Integration

The rationale for integrating micro-macro variables and processes derives from the nature of organizations: "[W]hat we study in and about in organizations are phenomena that are intrinsically mixed-level" (Rosseau, 1985, p. 2). Ignoring the differences between and influences on focal units of analysis underreports organizational complexity and invites a confounding of research designs. In addition, as open systems organizational activities and elements in one system are affected by actions impacting and developments within supra- and sub-systems (Kast & Rosenweig, 1973; Katz & Kahn, 1978). Recent theoretical integrations of communication networks (Monge, 1987; Monge & Eisenberg, 1987) and structures (Johnson, in press), assimilation (Jablin & Krone, 1987), and superior-subordinate interaction (Dansereau & Markham, 1987b; McPhee, 1988) illustrate the entwined nature of micro-macro relationships. Yet, as these reviews indicate, comparatively few mixed-level investigations exist despite the central feature of integrated analyses in organizational research

Concomitant with the lack of mixed-level investigations, theoretical and empirical gaps hinder our understanding of organizational communication phe-

nomena. For instance, vertical communication chains are the basic elements of hierarchies. Yet, investigations of superior-subordinate linkages seldom examine distinctions in the function (purpose) of and influences on interactions though theoretically and practically critical (McPhee, 1988). Further, commonly used micro-based theories appear inadequate to explain expectations of differences in communication between hierarchical levels. Current models of employee communication competence do little to explain how this construct is similar or differs among entry-level employees, mid-level managers, and chief executive officers. In this case, interpersonal theories of communication competence appear necessary but not sufficient to explain issues of organization-wide communication competence (Jablin, Cude, Wayson, House, Lee, & Roth, in press), and new conceptual frameworks may be necessary to consider such a micro-macro linkage (Blau, 1987).

Micro-macro integration is also necessary to reduce the fragmentary descriptions of relationships among communication activities and processes in organizations. This fragmentation is exemplified by a conscious choice to study an issue at a single level of analysis (micro or macro) without consideration of the influence of or its impact on other levels. Theories forthcoming from such research tend to lack causal connections to central organizational features and are the frequent focus of debate in organizational theory (e.g., Astley & Van de Ven, 1983; Scott, 1987).

The fragmentation is also exemplified by the lack of investigation of cross-level issues, at times leaving reviewers reluctant to draw conclusions about the impact of macro independent variables on micro communication-related outcomes (Berger & Cummings, 1979; Jablin, 1987). The lack of cross-level research is evident in the participation in decision making (PDM) research, a much-researched feature linked to employees' satisfaction and productivity (Miller & Monge, 1986; Redding, 1972). Few studies examine how macro features

moderate the relationship between PDM and satisfaction/productivity. In fact, a secondary analysis of the thirty-six empirical field studies in a meta-analysis of PDM (Miller and Monge, 1986) shows that only 17% of the studies investigate the impact of hierarchical level, divisional affiliation or technology though such information is available to primary researchers and theoretically relevant. Due to the infrequency of cross-level investigations of PDM, meta-analyses can not answer theoretically important questions about macro-level influences. In short, researchers must provide theoretical models (and subsequent empirical investigations) enabling the contextualizing of one unit of analysis to other units of analysis (e.g., individual to divisional level), make sense out of contradictory and paradoxical research findings, and ask new questions providing directions for future research if fragmentation is to be reduced.

Thinking across levels of analysis may also reveal more about how organizational communication is different from "interpersonal communication in organizational contexts." In particular, integration can lead to the development of organizational communication theories (e.g., organization-wide communication competence) as opposed to the mere application of interpersonal theories in a different context. Constructing theories which incorporate the relationship of communication to structure::action paradoxes, networking proclivities, and market forces hold promise for strengthening the legitimacy of the organizational communication field as a unique research domain.

In sum, the integration of micro-macro variables is critical to the development of organizational communication as an academic field. Mixed-level analysis is inherent to organizational phenomena, and its neglect perpetuates the gaps in and fragmentation of organizational communication theories. Conversely, integrating micro-macro concepts may lead to new theories which may

provide more holistic representations of organizational communication.

It would be short-sighted, however, not to acknowledge a rationale for single-level analysis in organizational communication research. One reason for limiting programs of research to a single level of analysis (examining exclusively micro or macro variables) is a belief in the generalizability of research findings across organizational levels and/or organizations. For instance, the property of "supportiveness" (Redding, 1972) may be critical to subordinates' satisfaction with interactions with their superiors regardless of the context and may approximate a compositional model. Compositional models "specify the functional relationships between variables at different levels presumed to be functionally similar" (Rosseau, 1985, pp. 11-12), but should be tested and not assumed to be valid. Until saddled with inconclusive results or result contradictory to theory, researchers assuming the variable to be isomorphic across levels are likely to overlook potentially mitigating factors (e.g., workgroup coordination mode, organizational culture, environmental impingements) in data analysis.

A second reason perpetuating single-level research is the belief in an approach to conceptual and methodological precision. Focusing on a single level of analysis can help: (1) avoid misspecification (e.g., using individual level data to infer about organizational performance) and incongruities in data aggregated at the level of analysis; (2) establish empirical patterns for the measurement of variables and their covariates at the same level; and (3) build upon lines of research (Daly & Korinek, 1982; Farace & Kaplan, 1984; James, 1982; Richetto, 1977; Van de Ven & Perry, 1980). This view sees the lack of micro-macro integration as an outgrowth of good scholarship. However, conceptual and methodological precision can be equally attributable to mixed-level research (Berger & Cummings, 1979; Dansereau & Markham, 1987; Rosseau, 1985). Finally, a continued artificial dichotomy (Jablin, 1982) of micro- and

macro-levels of investigation for whatever reason overlooks crucial research questions, makes assumptions about the generalizability of findings from one level to another, and ignores factors potentially confounding the research design. These are risks which researchers have been all to willing to take.

Forms of Mixed-Level Analyses

There are numerous means to design mixed-level analyses. Utilizing Rosseau's (1985) framework, this section presents three types of mixed-level analyses: compositional, cross-level, and multi-level. Further, consistent with earlier observations of the lack of macro research, this section seeks to highlight the role of macro variables in mixed-level analyses.

Compositional Analyses

As noted earlier, compositional analyses measure phenomena that are assumed to be isomorphic across different levels of analysis. In other words, the functional nature of two constructs are expected to be uniform and not change across departments or hierarchical levels. For instance, if the relationship between managerial conflict management styles and satisfaction with supervision stays constant across intra-organizational boundaries, then it is possible that these constructs are perceived similarly and will render valid measurements regardless of the organizational context or how the data are aggregated. Hence, distinctions between the level of analysis being the individual, group or organizational is a moot point. Similarly, the relationship of boundary spanning behaviors to individual outcomes may be consistent regardless of the boundary crossed (intra- or inter-organizational) and can be measured regardless of the context. However, if asymmetric relationships between parties (e.g., status differences) reveal differences in outcomes at the individual or group level of analysis, then a compositional model may not be

valid. The constructs then have entirely different meaning for subjects depending on the level of analysis.

Examples of ill-fated compositional models are found in some measurements of organizational and communication climate (Falcione & Kaplan, 1984; James and Jones, 1974). Researchers once aggregated measurements of "perceptual measurement-individual attribute" climate as a measure of organization-wide climate. Yet, individuals' perceptions of climate differ given members' exposure to sub-elements of the organization and do not provide a global assessment of the organization's climate. Hence, conclusions from the individual unit of analysis do not provide an indication of the organization-wide climate.

An advantage of a compositional model is the stability of constructs between levels of analysis. Its similarity among levels of analysis is important for the gathering of data about the effects of environmental uncertainty. If chief executive officers' perceptions of environmental uncertainty are similar to those of front-line or mid-level managers, then an aggregate of subjects' responses could be gathered from any organizational level. Further, nonsignificant differences between levels in the perceptions of uncertainty would also suggest a test of the construct's convergent validity (Rosseau, 1985). A disadvantage of compositional models is the difficulty in validating such models. For instance, some elements in a conflict style-satisfaction relationship may be constant, but differences at various hierarchical levels in relational symmetry and power will alter the construct and lead to false conclusions.

Cross-Level Analyses

Three types of cross-level analyses are: independent and dependent variables at different levels; contextual factors as moderators of individual-level relationships; and comparisons of the individual to the group

affecting organizational outcomes (Rosseau, 1985). Novel research derives from the examination of contextual moderators and comparisons of the individual to the group affecting organizational outcomes, especially regarding comparisons of the individual to group in the areas of group uniformity (Danowski, 1980) and social justice. In addition, technology can be a independent variable or a moderator depending upon its relationship to relationship of primary interest (Rosseau, 1985). However, this essay concentrates on the use of independent and dependent variables of different levels because: (1) the necessity of micro-macro integration in organizational communication research; (2) this approach shows the clearest picture of micro-macro integration; and (3) these research design usually require forethought as opposed to other designs where researchers can notice the context and test for possible covariates post hoc. Hence, macro independent variable, micro dependent variable and micro independent variable and macro dependent variable designs are illustrated below.

Macro-Independent Variable, Micro-Dependent Variable. One approach to integrating levels of analysis is examining the impact of macro structures and processes as independent variables on micro communication behaviors. For instance, contingency theories (Kast & Rosenweig, 1973; Miles, 1980; Perrow, 1970) examine the influence of organizations' structures, technologies, environments, and relative maturity (i.e., life cycle) on their internal and external communication activities. Since organizational communication research generally emphasizes micro variables and neglects macro structures and processes, this section presents a brief overview of research employing macro organizational properties to study micro communication behaviors. Table 1 identifies reviews representative research in the areas of structure, technology, environment, and life cycle.

Organizational Structure. One of the most commonly researched macro

variables, organizational structure, is dominated by four structural dimensions: configuration, complexity, formalization, and centralization. The

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INSERT TABLE 1 ABOUT HERE

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latter three dimensions may have a more noticeable impact on micro communication activities because they directly shape "who communicates with whom." Consequently, these elements are often referred to as "structuring" dimensions (Campbell, Brownas, Peterson, & Dunnette, 1974; Dalton, Todor, Spendolini, Fielding, & Porter, 1980) and may constrain micro-level interactions to a greater extent than physical organizational dimensions (e.g., size).

While the relationship of formal structure to communication behaviors and activities is implicit in many organizational theories, this relationship remains under-developed. Communication-structure relationships are often examined in isolation of other relevant structural characteristics (e.g., considering the effect of centralization but not formalization). Further, the research seems oblivious to the theoretical possibility that "some structural dimensions may have stronger relationships with communication behavior and attitudes than other dimensions" (Jablin, 1987, p. 411). Underscoring the lack of research in this micro-macro linkage, Jablin (1987) notes,

> Regrettably, for some structure-communication relationships (e.g., formalization) our knowledge rests on as few as two or three investigations....While it may not be in vogue to study formal structure-communication relationships, it is clear that such research is sorely needed. Either we should study these issues empirically or stop making assumptions about them (p. 413).

Technology. Technology at the workgroup and organizational level is of particular interest to communication researchers because it exhibits control-

ling and coordinating processes similar to "structuring" dimensions and often requires special integrative efforts to accomplish the "input-throughput-output" process. The impact of organizations' most pervasive (i.e., "modal") technology on a unit's communication activities depends on the extent to which the technology impinges the unit's operations, though organizational size may moderate technology's effect (Miles, 1980). Classifications of technology include production system (unit, mass, process; Woodward, 1965) , task interdependence (pooled, long-linked, intensive, & team; Thompson, 1967; Van de Ven, Delbecq, & Koenig, 1976), and task nonroutineness (craft, routine, engineering, nonroutine production; Perrow, 1970). Whether technology is treated as an independent or a moderating variable depends on researchers' identification of the level of reference, especially the level of analysis "in which the data are assigned for hypothesis testing and statistical analysis" (Rosseau, 1985, p. 4).

While technology often affects communication behaviors (e.g., channel, frequency of interaction), organizational communication researchers seldom analyze technological variables in their studies. Research in areas such as group decision processes, superior-subordinate interaction, climate, and network involvement would benefit from considering how technology relates to these phenomena. Similarly, further development of the technology-communication relationship would benefit from investigations of technology's relationship to related macro variables (e.g., structuring dimensions, market changes, employee demographics).

Environment. The environment in which an organization is embedded prompts many task-related communications, influences organizational structuring, and coordination mechanisms. Environment can also serve as the substance of organizational members' interactions (Huber & Daft, 1987). A number of

typologies and measurements of the environment presently exist (e.g., Emery & Trist, 1965; Jurkovich, 1974; Miles, 1980; Milliken, 1987). These typologies generally view environments as containing resources essential for organizational survival (resource-dependency perspective) or shaping organizational processes (information processing perspective). Since "organizations extract, process, and act on information from their environment" (Huber & Daft, 1987, p. 132), these distinctions may affect how individuals interpret and respond to environmental uncertainties. Typically, research analyzes communication behavior as the dependent variable and occurring within rather than between organizations. In doing so, the perceptual and actual oral/written communication acts/interacts transpiring across organizational boundaries have been largely overlooked.

Life Cycle. The organizational "life cycle" is an imperfect biological metaphor describing the various phases of organizational growth and development (startup, growth, maturity, decline, revival, death; Greiner, 1972; Kimberly & Miles, 1980; Miller & Friesen, 1984; Quinn & Cameron, 1983). The metaphor is imperfect because some organizations are likely never to die (e.g., military, internal revenue services) while others avoid stages of growth (e.g., being incorporated as a large organization instead growing incrementally) or never mature. However, the life cycle as an exogenous variable is under-utilized in both theoretical and empirical realms. For instance, the life cycle presents a longitudinal setting (Kimberly & Miles, 1980) for the investigation of various micro processes (e.g., leadership behaviors, workgroup interaction, conflict) and macro factors (e.g., structure, environment). The lack of consideration the life cycle receives as an independent or moderating variable indicates how far the field must travel before an integration of micro-macro issues is achieved.

In sum, designs exploring the relationship of macro independent varia-

bles to micro dependent variables are often labeled as contingency models (activity in the micro realm is contingent or dependent upon external elements). The advantages of this approach include: clearly distinguishable and easily constructed research designs; incorporation of obvious features of organizations; and the testing of macro "imperatives" (Miles, 1980). However, while macro independent variable, micro dependent variable holds great promise for the field of organizational communication, researchers should be cautious of (1) dividing structures and actions into organized parts that generate hypotheses (e.g., microscopic dissections organizational configuration), but do not mirror reality, (2) developing hypothetical/theoretical relationships too complex to examine empirically (Giesen, 1987), and (3) not having reasonable limits for what should be considered in a study (i.e., the list of organizational features [demographics, industry, departmental affiliation] can be endless). These problems are carryovers from contingency perspectives which at times is atheoretical and does not generate adequate theories to explain significant findings (Rosseau, 1985).

Micro-Independent Variable, Macro-Dependent Variable. It is also evident that individual actions can have persuasive influence on social settings. As Rosseau (1985, p. 15) notes, "upward-oriented cross-level models may be valuable in explaining phenomena such as whistleblowing, change agency, and problem solving." Examples in organizational communication literature include studies of whistle-blowing effects on organizational operations (Stewart, 1979), the effects of the entrepreneur on organizational development (Kimberly, 1980; Rogers & Larson, 1983), the impact of individual-level feedback on group performance (Stone, 1971), the influence of a workgroup member's individualization and role negotiation efforts to change the nature of the work group (Jablin & Krone, 1987; Schneider, 1987) to name a few.

Schneider (1987) theorizes that organizations' attraction-selection-attrition processes create and sustain unique organizational climates. Employees self-select themselves to and out of organizations on the basis of their interactions with members. Primarily through these interactions, employees themselves restrict the range of attitudes, processes, and structures to be found in an organization. Resulting organizational climates and structures are less the result of technological or environmental impingements than the composition and interactions of personnel comprising the organization.

Advantages of a micro-independent variable, macro-dependent variable approach are its recognition of individuals' influence on workgroup and organizational outcomes and a reversal of macro imperatives. Disadvantages include: developing relevant hypotheses, measuring individual influence, and partially out extraneous factors leading to group and/or organizational outcomes.

It is also important to note the absence so far of an explicit overview of network analysis research. A discussion of network research appears at this juncture due to the dual use of networks as independent and dependent variables. As thorough reviews of levels of analysis in network research are available (Johnson, in press; Monge, 1987; Monge & Eisenberg, 1987), only a modest mention of its cross-level uses will be noted. As a macro independent variable, network properties (e.g., density, roles, proximity) appear to shape individual productivity, commitment, attitudes (psychological distance), and perceptions of social support. As a dependent variable, individuals' roles in emergent networks are shaped by environmental (causal textures, uncertainty), organizational (life cycle), and individual (cognitive complexity) factors.

Given networks' propensity to be related to all aspects of organizational activity, it is a critical integrating feature of organizations. Further, some aspects of network communication behavior may approximate compositional models. For instance, boundary-spanning theory and research (Adams, 1980) show

the constructs of bridging units having similarities across individual, group and organizational levels. Of theoretical and practical importance, studies of boundary spanning activity may provide insight into the processes by which organizational representatives establish linkages with members of other organizations (affecting profitability and inter-organizational relationships) as well as how individuals' cognitions affect the interpretation and transmission of data to organizational members. In short, the potential use of network analyses in compositional and cross-level research may enhance researchers' ability to perform integrative research in general and may lead to its future development as a means for multi-level analysis.

Multi-Level Analyses.

Multi-level models identify relationships among variables which apply at two or more levels and "assume formal identify between constructs across levels and therefore require specification of compositional models before they can be tested" (Rosseau, 1985, p. 16). Staw, Sandelands, & Dutton's (1981) theoretical development of threat-rigidity effects exemplifies multi-level research by exploring how environmental threats affect individuals, workgroups and organizations in parallel ways. Staw et al., (1981) also examine the effect of individual-, group- and organization-level reactions on functional and dysfunctional organizational consequences.

A number of lines of research having potential for multi-level analysis include information processing systems, negotiation and bargaining, and role-assimilation. For instance, an information processing perspective examines how data regarding events in organizations' external environments and work units and in individuals' role set are acquired, interpreted, and transmitted (Galbraith, 1973; Huber & Daft, 1987; Salancik & Pfeffer, 1978). Information sharing theories account for the individuals' actions crossing multiple levels

via intra- and interorganizational boundaries, and research foci include the formal (e.g., sharing information with formally designated units) and informal (e.g., emergent network) multiple interacts of employees' information sharing behaviors. By treating organizations as information processing systems, researchers examine communicative acts concurrently at micro (e.g., individual cognitions) and macro (e.g., environment, intra-organizational) levels.

Similarly, negotiation and bargaining theories examine interactions at individual, unit or divisional, and organizational levels (Miles, 1980; Putnam & Poole, 1987). Analyses at the individual level examine dyadic relationships while research at the unit or divisional level focuses on coalition formation. At the organizational level researchers analyze the interactions between stakeholders and/or coalitions and the purveying of power. In turn, theories of role-assimilation may create compositional models for role expectation (sending and receiving of pivotal, relevant and peripheral norms and behaviors), role learning and individualization (process by which members attempt to change others' expectations of their roles to be more self-satisfying) constructs (Feldman, 1976; Graen, 1976; Jablin & Krone, 1987). Subsequent role negotiations with members of their role set affect their relationships with individuals and, ultimately, the workgroup and organization as well.

Multi-level analysis is a rigorous means of integration due to its requirements for (1) the compositional nature in the constructs of interest and (2) identification of patterns of relations and influences across levels. While multi-level theories appear to make full use of organizational properties and processes in their propositions and analyses, few theories and little research attempt to explore this path perhaps due to its difficult requirements.

In summary, these three mixed-level models for integrating organizational communication research reveals a breadth of research foci reflective of the

nature of the phenomena studied, researchers' interests, and the ease or difficulty of mixed-level analyses. While each integrative approach offers fruitful paths for exploration, the easiest of the mixed-level analyses to document in this essay are macro-independent variable, micro-dependent variable designs. However, its emphasis in this essay does not signal that it is an over-researched approach. On the contrary, some findings reviewed above represent the only communication-related studies published in a particular area.

Theoretical and Empirical Mechanisms for Higher Order Integrations

While organizational communication researchers should develop compositional, cross-level, and multi-level research designs, the field also faces issues superseding the investigative ability of most mixed-level designs. Specifically, researchers face contradictory, paradoxical and perplexing (e.g., market forces) factors shaping communication activities and processes. In this section, we review meta-analytic techniques, and structuration and population ecology theories, respectively, as means of addressing unique issues. These approaches differ from compositional, cross-level, and multi-level analyses by (1) confirming previous empirical analyses based on average effect size and clarifying the relationship of research findings to theory (meta-analysis), (2) showing how organizational paradoxes exhibit reciprocal influences and coexist rather exist as unreconcilable dichotomies (structuration), and (3) analyzing juxtaposed influences of market forces and managerial action and how these relationships develop over <u>time</u> (population ecology). Following an overview of each approach, a discussion of their strengths and weaknesses as integrative mechanisms follows.

<u>Meta-Analysis</u>

Meta-analysis refers to methods of quantitatively summarizing available

data on a particular topic. A properly conducted *meta-analysis incorporates* the best evaluative standards to summarize the available quantitative research using analysis, typologies, and theoretical justifications to advance conclusions (Guzzo, Jackson, & Katzell, 1987). The intent of this technique is to draw conclusions about a body of existing research using theoretically-based analytic distinctions.

Meta-analysis differs from other type of literature review techniques (often called narrative or box-score reviews) by the use of systematic methods of statistically summarizing available data. Narrative literature summaries create syntheses of available quantitative data using the results of the significance tests as indicators of the established relationships and to address methodological and theoretical issues. In contrast, the goal of the many forms of meta-analysis (Bangert-Drowns, 1986) is a statistical averaging of research results to assess the existence of relationships, incorporating the methodological and theoretical issues of a narrative review and creating a quantitative summary of the available research.

Theoretical (Cook & Leviton, 1980) and actual (Cooper & Rosenthal, 1980) comparisons between the traditional narrative review and meta-analysis demonstrate the superiority of meta-analysis as a summary technique, particularly with respect to the amount of Type II error in research. Mintz (1983) argues that the major advantage of meta-analysis is the explication and, thus, testability of the methods used to reach a conclusion about a body of research. Despite the limitations and problems involved with meta-analysis (for a discussion of these issues, see Cooper, 1982; Matt, 1989; Petty, Cacioppo, Kasmer, & Haughtvedt, 1987; Petty, Kasmer, Haughtvedt, & Cacioppo, 1987; Stiff, 1986; Stiff & Boster, 1987; Guzzo, et al., 1987), the ability to systematically analyze several hundred studies is advantegeous. Of particular interest to organizational communication scholars is the introduction of macro

features as moderators into debates over single-level research findings. Meta-analysis can assist in the resolution of disputes by demonstrating that moderators potentially explain inconsistent or contradictory results.

In addition, the demonstration that a moderator variable can be used to classify results is a cornerstone of meta-analysis and has resolved both methodological and substantive issues in the organizational literature (Miller & Monge, 1986; Iaffaldano & Muchinsky, 1985; Macy, 1985; Allen, 1987). Although there is no guarantee that any coding scheme will eventually generate homogeneous results within the respective subgroups, analyses introducing organizational features as moderators may resolve on going debates concerning superior-subordinate (e.g., compliance gaining) and workgroup (brainstorming methods) interactions.

Conducting a Meta-Analysis. As noted earlier, meta-analysis does not rely on the results of a significance test to assess the existence of a particular effect. Instead of vote-counting the results of individual studies' significance tests (e.g., Rogers, 1983), the meta-analytic review estimates an average effect size across a sample of studies. The reviewer uses the average effect size to determine whether the variation in the observed effect sizes among studies is due to a systematic feature or can be attributed to sampling error (Harris, 1989; Hedges & Olkin, 1985; Hunter, Schmidt, and Jackson, 1982; Hunter & Schmidt, 1990; Rosenthal, 1984, 1987; Wolf, 1986), a practice which reduces the likelihood of Type II error (Allen & Preiss, 1990).

Conducting a meta-analysis involves three basic steps: (a) literature search, (b) coding of study features, and (c) statistical analysis. The first step, the literature search, involves obtnining a sample of literature for the analysis. Most meta-analysis methodologists recommend obtaining as large a sample as possible of the available quantitative literature on a defined

topic. Theoretically, all existing data would be the optimal state, but rarely is that possible. The process of defining studies for inclusion and exclusion is not trivial as: (1) the definition determines the appropriateness of data sets and shapes the review's outcomes; (2) the rules for inclusion or exclusion of data should be explicitly stated; and (3) the reviewer should indicate existing studies which are unavailable as well as obtained studies for which no estimate of the effect is recoverable.

After obtaining the material, the second step in meta-analysis codes each study for features of theoretical and methodological interest to the investigator. The coding should follow beliefs about the importance of features in the literature and reviewers should pay particular attention to comparing the expectations of theories, noting when theories diverge or converge and whether or not a potential moderator is theorized. Consequently, a critical feature of previous reviews is the stating of the data's theoretically important features.

The third step is performing the statistical analysis. An average effect is calculated, and the variance in findings is compared to the variance expected due to sampling error. If the variability among individual-study findings cannot be explained by sampling error, the existence of some potential moderator variable is indicated. If the theories guiding the researcher are sound, the moderator variable will be a coded feature of the context (e.g., hierarchical level) or methodology (self-report vs observer; lab vs field). Further, the heterogeneity of the findings will be explainable by some combination of those moderators. A "good" moderator would show homogeneity within a cluster but heterogeneity among clusters.

Suppose a meta-analysis examining the relationship between leadership style and workgroup productivity finds an average association which is zero. Yet, the test for the homogeneity of the estimate supports the existence of a

moderator variable. If the reviewer has theoretical reasons and codes for type of organization (e.g., Etzioni's [1975] scheme of coercive, remunerative, and volunteer), the reviewer can divide the studies into appropriate clusters and conduct a test of homogeneity for each of cluster's effect sizes. If the test of the effect size for each cluster (type of organization) is negative, the reviewer can offer the type of organization as a moderating factor as a potential explanation of the initial heterogeneous results. The reviewer's confidence in the findings will be increased by subsequent tests for other potential moderators that might generate homogeneous solutions and investigating for uncoded moderators and other sources of Type I or Type II error.

Critique. The goal of a meta-analysis is a theoretically grounded test of the data whic indicates fruitful areas for future research which will increase the comprehensiveness of the literature base. Meta-analysis is offered as an integrative mechanism because it (1) provides a superior review (strengthens power of analysis to discover significant effects, works off effect sizes, reduces chance of Type I and II errors) to other literature review methods and (2) can assist in micro-macro integration by assessing cross-level analyses and through use of macro features as a covariate. While testing for the effect of macro variables as covariates may seem counterproductive with the goals of this essay, such analyses are the only means to resolve contradictory findings at a single-level of analysis and the information is otherwise lost for integrative, mixed-level purposes.

The key to any meta-analysis, however, depends on (1) the existence of detailed and established theories that permit the examination of data sets to test apriori established models and (2) the availability and inclusion of relevant studies. As in any secondary analysis of data, inaccuracies enter the analysis with missing or unusable studies, varying ranges and reliabilities

(not all meta-analyses correct for attenuation), and the selective coding of moderators. These problems may call the findings of a meta-analysis into question (Guzzo, 1987).

Structuration

A second approach to micro-macro integration views macro social systems (e.g., organizational structure) as "the derivative of individual action" (Astley & Van de Ven, 1983, p. 251). These theories focus on how patterns of interactions create and reproduce meaning, climates and structures in organizations (McPhee, 1985; Poole, 1985; Ransom, Hinings, & Greenwood, 1980; Schneider, 1987). For instance, a structurational theory of climate argues that climate is "a belief and value structure members employ as they act in the organization. Because it is a generative principle behind member action, the climate is involved in the production of organizational systems" (Poole, 1985, p. 101), and it consequently becomes the medium of its own action and helps create its own outcome.

Structurational theory shows how created and negotiated forms such as rules at times substitute for interaction (McPhee, 1985). As members appropriate a modality of structure (e.g., rules), the action reproduces the structure which then may become more important in the work unit as members look to rules rather than iteration to guide/restrain future actions. Researchers employing this perspective analyze the oral and written acts and interactions of employees which create and sustain the meanings substantiating organizational forms and divisions (McPhee, 1985; Poole, 1985).

As suggested by Poole and Van de Ven (1989), a theory of structuration is able to examine the paradox of action::structure because it "posits that structure and action coexist in a mutual process of production and reproduction. Action draws on structure; structure only exists in action; and they connect in modalities of structuration" (p. 575). Structuration attempts to

explain how action and structure interact by focusing on the role of interaction and reciprocated influences in the creation of organizational features (e.g., structures, climate, culture) via shared meanings. This focus has the potential to lead to insights on the development of organizational forms and how they are sustained.

Critique. While structuration has the unique potential to resolve some longstanding debates in organizational theory (see Jablin, 1987; McPhee, 1988; Poole & Van de Ven, 1989), at present it is not without theoretical and methodological problems. As a general theoretical note, applications of structuration theory to organizational contexts have yet to specify under what conditions does an enacted social structure become "permanent" and what determines the structure's utility. Given the fundamental importance of emerging structure to its counterpart (action), further elaboration on this issue is required. More specific to analytic considerations, a major concern is structuration's not being susceptible to empirical research. Given the complexity of modalities and the obscure empirical references, qualitative methods must be employed. However, the use of qualitative methods in this situation questionable as methods are: (1) primarily descriptive (i.e., unable to make predictions at this point); (2) susceptible to examining action::structure at only one level of analysis; and (3) consequently, unable to disprove a structurational theory, implying that the theory can not be proven either. Further, organizational theorists have not set forth clear guidelines on how to study structuration and what form structuration modalities will manifest themselves for observation, thus limiting the ability to predict its occurrence.

Population Ecology

Population ecology is an outgrowth of deterministic sociological theories and draws on models in the biological sciences (McKelvey, 1982; Tushman &

Romanelli, 1985). This theory looks at organizational growth and development as more of a product of market forces rather than managerial actions as in life cycle theories (Aldrich, 1979). While earlier theoretical explications of population ecology eliminated the role of individual action, recent conceptualizations by Tushman and Romanelli (1985) offer a punctuated equilibrium model of organizational evolution. They theorize that organizations are subject to alternating cycles of convergence and reorientation. During convergence, organizations experience an elaboration of structures, systems, controls, and resources stemming from managerial actions. These actions are primarily maintenance of existing structures or the slow actualization of organizational planning. In contrast, during periods of reorientation there is discontinuous change where strategies, power, structure, and systems are fundamentally changed and realigned.

Reorientation is typically the result of environmental impingements such as market forces (recession) or major disturbances in the market (legislation, assassinations, catastrophes, war, bank failures). However, management is not completely powerless during these shake-ups in the environment. Though the environment is changing the nature of the organization, Tushman and Romanelli (1985) suggest that strategic actions by top management create new periods of growth and convergence and that researchers should examine managerial actions in light of environmentally-induced transformations and with a view of how managerial actions in periods of convergence and reorientation influence each other.

Critique. The strength of this approach is its reexamination of the relationship of individual to organizational outcomes. Whereas most organizational communication research rarely considers the interrupting or dominant effect of forces external to the organization on activities and processes, a population ecology deals directly with market factors and other external

impingements, examines development and changes in organizations with a long term view. Further, researchers employing this perspective may be able to assess the impact of individual actions and communication processes/structures on organizational differences in organizational structure and survival rates. Problems inherent with a population ecology approach include blurred distinctions of boundaries between temporal periods, a tendency toward examining structural and not individual outcomes, the lack of measurement of individual actions except for brief periods which obscure the role of individual action (Poole & Van de Ven, 1989), problems in quantifying managerial activity on an individual or group level, and the use of historical data (coded) and its possible distortion, especially if researcher use house organs as opposed to internal memos and accounting reports.

In sum, this section presents three very different means for dealing with specific integrative issues that mixed-level analyses may never be able to address. While these three mechanisms have little in common, it is important to note that their orientations are for the "big picture" as opposed to microscopic typologies. The final section of this paper makes some concluding comments and advances changes in the design of research.

Concluding Comments and Recommendations

Mixed-level research approaches are means by which scholars can begin to assess the many levels of influence on how organizational members interact, the content of their interactions, and the meanings and affect derived from those episodes. Compared to other organizational sciences, it is important for organizational communication not to lag behind in mixed-level approaches if we are going to be able to appreciate and properly incorporate their research findings and theoretical expansions, to further develop theories parallel with

the phenomena of study, and to avoid being seen as the "weak link" when interacting at jointly sponsored meetings or on projects.

This essay is not suggesting that organizational communication scholars copy the actions of other related disciplines. For instance, in using cross-level models, scholars should avoid repeating the errors of contingency theory, where scholars generated potential and often statistically significant relationships without the theoretical background to suggest reasons for the findings and linkages to other predictive acts.

There are many factors which lessen the urgency for scholars to attempt mixed-level analyses. Namely, consultants and organizational representatives often do not want information on systemic or distal factors which are beyond their immediate control (in terms of authority or time to solve such problems) when they need quick answers for more proximal problems (superior-subordinate conflict resolution). Others may not be comfortable with non-social psychological orientations given that the majority of research is psychologically-oriented. However, this essay provides examples of mixed-level research which may be a good starting point for a series of integrative studies. The primary reasons for advancing mixed-level analyses is not to show the superiority of one set of research designs over another. Rather, we need to study the phenomena of interest in a manner which parallels that phenomena. In organizations, phenomena are multi-level and require mixed-level and integrative approaches.

For those who are involved in single-level lines of research and can not easily convert to mixed-level designs, the following is a series of suggestions on how information may be gathered to assist in <u>post hoc</u> meta-analyses. Though we feel a single-level approach is ultimately inferior if maintained over the line of research, it is acknowledged that there has to be a starting point somewhere.

One initial step necessary for micro-macro integration is an increased

reporting of organizational characteristics such as organizational structure, technology, environment, and life cycle stage. The increased reporting of macro features in micro-focused studies within single or multiple organizations will ultimately enable researchers to test lines of research (e.g., superior-subordinate interaction, decision making, compliance-gaining) for moderating (i.e., macro) features. At first, the inclusion of macro level information may be an artifact in reporting the study's context or a footnote. Yet, when incorporated into a meta-analysis, these artifacts become a means to discern the validity of theoretical relationships. Consequently, experiments solely on the micro level as well as those combining micro- and macro-levels should provide a dual reporting of data at both the appropriate levels.

Another step which will facilitate micro-macro integration is the increased use of macro features as manipulation checks. When theoretically pertinent, the inclusion of such features will add to the study of concern and potentially supply important information/data in three respects. First, the comparison can be included as a covariate if a macro feature significantly affects the dependent variable. Again, the comparison can be later included in a meta-analysis which will have greater power to discern significant results. Second, should the feature have negligible influence on results of the study, then the data may have increased generalizability across contexts of those tested macro variables (e.g., organizational size, technology, structure). The use of macro features as manipulation checks seems especially critical for studies using cross-sectional data and crossing levels of analysis as the impact of organizational properties is often assumed to be constant.

As a third step, scholars should continue to seek theoretical and empirical resolution of problems associated with equivocal instruments and with contradictory, insignificant, and/or inconclusive results. When comparing

studies within a line of research, it is not uncommon to find instruments with different emphases used to measure a single conceptual variable (Porter & Lawler, 1965; Milliken, 1987). A meta-analytic investigation is able to test for differences among instruments as a moderator and indicate whether differing or conflicting results are due to the instruments. In turn, a stream of research that contains contradictory, insignificant, and/or inconclusive results should indicate that a meta-analysis is in order. While meta-analyses of data sets with comparatively fewer number of subjects (e.g., 200) have less power than those with large numbers of subjects (e.g., 2000), the technique is still capable of reporting average effect sizes and testing for potential moderating factors.

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Table 1

Illustrative Review of Research with Macro Features as Independent Variables and Communication Activities as Dependent Variables

Feature	Specific Aspect	Communication Activity	Study
Structure-Configuration	span of control	amount of upward & downward communication	Brewer, 1971
		subordinates' perceptions of openness with superiors	Jablin, 1982
	heirarchical level	amount of time spent message sending & receiving	Bacharach & Aiken, 1977
		use of influence tactics	Kipnis, Schmidt, & Wilkinson, 1980
		information adequacy	Penley, 1982
	organizational size	volume, frequency, & mode of communication	Ingham, 1970
	sub-unit size	group connectedness	O'Reilly & Roberts, 1977
		coordination modes	Van de Ven, Delbecq, & Koenig, 1976
Structure-Complexity	Vertical	perceptions of amount of feedback received	Rosseau, 1978
		the type of interaction (e.g.,memos), content, and frequency of interactions with "focal" others	Klauss & Bass, 1982
		impact of sharing information with subordinates regarding organizational success	Ghiselli & Siegel, 1972
	horizontal	frequency of organization-wide meetings, scheduled meetings, and unscheduled meetings	Hage, 1980 Hage, Aiken, Marrett, 1971
		communication modes (e.g., rules, written procedures, integrator roles, integrative teams) required for "effective" integration	Lawrence & Lorsch, 1967

Table 1 (cont.)

Feature	Specific Aspect	Communication Activity	Study
Structure-Formalization	complete descriptions & job specificity	use of integrative modes (e.g., attendance at departmental meetings, frequency of scheduled and unscheduled commuications)	Hage et al., 1971
	extent that written rules & procedures govern job activites	perceived amount of feedback received from supervisors and coworkers	Rosseau, 1978
Structure-Centralization	participation in strategic decisions	reports of the frequency of scheduled/unscheduled horizontal interactions and attendance at departmental meetings	Hage, et al., 1971
		volume of oral upward, downward, lateral and total communication of department heads and subordinates	Bacharach & Aiken, 1977
	participation in work-related & strategic decisions	influence of strategic and task related upward influence strategies	Krone, 1985
Technology	task interdependence and non-routineness	usage of coordination mechanisms (e.g., rules, plans, vertical channels, horizontal channels, unscheduled and scheduled meetings)	Van de Ven, et al., 1976
	task non-routineness	amount and equivocality of information to be processed	Daft & Macintosh, 1981
		leader structuring, directiveness, and consideration behaviors	Ford, 1979
		perceptions about the job and related attitudes	Rosseau, 1978

Table 1 (con't)

Feature	Specific Aspect	Communication Activity	Study
Environment	uncertainty of cause-effect relationships	use of coordinating mechanisms	Lawrence & Lorsch, 1967
	instability	routing of messages	Tushman, 1979
	volatility	shaping organizational structure	Tung, 1979
	availability of resources	interacts between organizations	Van de Ven & Walker, 1984
Life Cycle	birth	degree of centralization	Kimberly, 1980
		decision making styles	Miller & Friesen, 1984
		learning styles	Miles & Randolph, 1980
		network development	Monge, Farace, Miller, & Eisenberg, 1982
	death	ceremonies	Harris & Sutton, 1986
		leaders' discourse	Sutton, 1987
		fit between ideology and structure	Grimes & Cornwall, 1987

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